UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,440	12/11/2001	Michael J. Homberg	C0012/7011	5250

21127 7590 05/06/2004

KUDIRKA & JOBSE, LLP
ONE STATE STREET
SUITE 800
BOSTON, MA 02109

EXAMINER	
TORRES, JOSEPH D	

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 05/06/2004 3

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/016,440	HOMBERG ET AL.
	Examiner	Art Unit
	Joseph D. Torres	2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29 and 32-43* is/are rejected.

7)☒ Claim(s) *1-43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 December 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: '460', '462', '464', '466', '470', '472', '474', '476' and '478' in Figure 4C. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1-43 objected to because of the following informalities:

- Lines 13-14 of claim 1 recite, "an egress data block derived from in the ingress data block". The Examiner suggests the following correction: --an egress data block derived from ~~in~~ the ingress data block--. Claims 15, 29 and 43 recite substantially the same language and claims 2-14, 16-28 and 30-42 depend from respective claims 15, 29 and 43 hence inherit the deficiencies in claims 15, 29 and 43.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2 and 3 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites, "adding the code check generated in step (a) to the code check generated in step (b2)". The Examiner asserts that step (b2) makes no mention of generating a code check, hence "the code check generated in step (b2)" lacks antecedent basis.

Claim 3 depends from claim 2, hence inherits the deficiencies in claim 2.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites, "rotating the code check". A code check is a group of bits. It is unclear how they can be rotated

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP

§ 2172.01. Claim 5 recites, “rotating the code check”. The omitted structural cooperative relationships are: the relationship between “rotating” and “the code check”.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between “generating a code check from data in an ingress data block and from an ingress header associated with the ingress data block” and “generating a one's-complement sum of successive n-bit binary words included in the ingress data block and the associated ingress header”.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between “generating a code check from the code check generated in step (a) and an egress header associated with an egress data block derived from in the ingress data block” and “generating a one's-complement sum of successive n-bit binary words included in the egress header”.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for

omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between "generating a code check from data in an ingress data block and from an ingress header associated with the ingress data block" and "generating a term-by-term modulo-two sum of successive n-bit binary words included in the ingress data block and the associated ingress header".

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between "generating a code check from the code check generated in step (a) and an egress header associated with an egress data block derived from in the ingress data block" and "generating a term-by-term modulo-two sum of successive n-bit binary words included in the egress header".

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between "generating a code check from data in an ingress data block and from an

ingress header associated with the ingress data block" and "generating the residue of the ingress data block and the associated ingress header modulo a generator polynomial".

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between "generating a code check from the code check generated in step (a) and an egress header associated with an egress data block derived from in the ingress data block" and "generating the residue of the egress data block modulo a generator polynomial".

Claims 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claim 1 recites, "an outgoing encoder that generates an egress code check from the egress header and from internal contents". The omitted structural cooperative relationships are: the relationship between "an egress code check" and "internal contents". Note: there is no antecedent basis for "internal contents", hence it is not even clear that "internal contents" is digital data nor is it clear how the "internal contents" relates to the egress header.

Claims 17-19 depend from claim 16, hence inherits the deficiencies in claim 16.

Claims 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claim 1 recites, "a controller that subtracts a portion of the ingress code check generated from the associated ingress header from the outgoing encoder contents and adds the ingress code check to the outgoing encoder contents". The omitted structural cooperative relationships are: the relationship between "the ingress code check" and "the outgoing encoder contents". Note: there is no antecedent basis for "the outgoing encoder contents", hence it is not even clear that "the outgoing encoder contents" is digital data nor is it clear how the "the outgoing encoder contents" relates to "the ingress code check".

Claims 17-19 depend from claim 16, hence inherits the deficiencies in claim 16.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 recites, "rotates the ingress code check". A code check is a group of bits. It is unclear how they can be rotated

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claim 18 recites, "rotates the ingress code check". The omitted structural cooperative relationships are: the relationship between rotating and "the ingress code check".

Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 recites, "rotates the ingress code check". A code check is a group of bits. It is unclear how they can be rotated

Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claim 33 recites, "rotates the ingress code check". The omitted structural cooperative relationships are: the relationship between rotating and "the ingress code check".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 4-15, 20-29 and 32-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturza; Mark A. et al. (US 6157642 A, hereafter referred to as Sturza).

35 U.S.C. 103(a) rejection of claim 1.

Sturza teaches generating a code check from data in an ingress data block and from an ingress header associated with the ingress data block (Inner Decoder 87 in Figure 6 of Sturza is a step for decoding inner encoded data to produce a outer encoded payload having a Reed-Solomon or BCH code; Note: if the Reed-Solomon or BCH code is systematic the Inner Decoder 87 will produce a outer encoded payload having a Reed-Solomon or BCH check code); b. generating a code check from the code check

generated in step a and an egress header associated with an egress data block derived from in the ingress data block (egress Inner Encoder 99 in Figure 7 of Sturza generates an encoded data from the outer encoded payload having a Reed-Solomon or BCH check code generated in step a by the Inner Decoder 87 in Figure 6 and from the egress header from Header Interleaver 96 in Figure 7 associated with an egress data block from Payload Interleaver 97 in Figure 7 derived from the ingress data block received at Payload Deinterleaver 90 in Figure 6; Note: if egress Inner Encoder 99 is systematic then egress Inner Encoder 99 generates a code check); and c. generating the outgoing information by combining the egress header with the associated egress data block and code check generated in step b (Modulator 101 in Figure 7 of Sturza combines the egress header with the associated egress data block and code check generated in step b to be modulated onto transmission symbols).

However Sturza does not explicitly teach the specific use of systematic codes to produce code checks, i.e., parity.

The Examiner asserts that any Reed-Solomon or BCH code has an equivalent systematic Reed-Solomon or BCH code (Note: systematic Reed-Solomon or BCH codes can be derived using Gaussian elimination which preserves all of the properties of the original Reed-Solomon or BCH codes since Gaussian elimination substantially produces an equivalent Reed-Solomon or BCH systematic code). One of ordinary skill in the art at the time the invention was made would have been highly motivated to use a systematic code for two reasons: 1) systematic codes greatly simplify data recovery at

the decoder and 2) generally packet protocols for satellite communications have separate areas in a packet for payload and parity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sturza by including use of systematic codes to produce code checks, i.e., parity. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of systematic codes to produce code checks, i.e., parity would have provided the opportunity to simplify data recovery at the decoder.

35 U.S.C. 103(a) rejection of claim 4.

Sturza teaches modifying the code check generated from data in the ingress data block and the associated ingress header to compensate for non-data bits added to the ingress data block (Interleavers are a means for modifying the code check generated from data in the ingress data block and the associated ingress header to compensate for non-data error bits added to the ingress data block).

35 U.S.C. 103(a) rejection of claim 5.

A rotated Reed-Solomon code check is still a code check since a Reed-Solomon code is a cyclic code.

35 U.S.C. 103(a) rejection of claim 6.

Sturza teaches modifying the incoming information to compensate for non-data bits added to the ingress data block (Interleavers are a means for modifying the incoming information to compensate for non-data error bits added to the ingress data block).

35 U.S.C. 103(a) rejection of claim 7.

Modulator 101 in Figure 7 of Sturza is a means for concatenating the egress header with the associated egress data block and the code check generated in step (b) onto a transmission frame.

35 U.S.C. 103(a) rejection of claim 8-13.

Sturza substantially teaches the claimed invention described in claims 1 and 4-7 (as rejected above).

However Sturza does not explicitly teach the specific use of a specific means for generating a check code.

The Examiner asserts that all of the encoding techniques of the Applicant's claims 8-13 are encompassed by the Sturza patent since the encoding techniques of the Applicant's claims 8-13 are particular embodiments of the encoding taught in the Sturza patent.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sturza by including use of a specific means for generating a check code. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a specific means for generating a

check code would have provided the opportunity to implement a specific embodiment of the encoders taught in the Sturza patent.

35 U.S.C. 103(a) rejection of claim 14.

Decoders 87 and 91 in Figure 6 of Sturza provide steps for comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check (comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check is a standard decoding step for block codes and can be found in any elementary text in error correction coding; the Examiner will provide a reference if the Applicant requests one).

35 U.S.C. 103(a) rejection of claim 15.

Sturza teaches an ingress encoder that generates an ingress code check from data in an ingress data block and from an ingress header associated with the ingress data block (col. 3, lines 20-21 in Sturza teach that Inner Decoder 87 may be a Block code; the Examiner asserts that if the block code is systematic, the payload and header data require a re-encoding step and re-encoding is a built in process in decoders for systematic block codes); an egress encoder that generates a egress code check from an egress header associated with an egress data block derived from the ingress data block and from the ingress code check (Header Outer Encoder 85 in figure 7 of Sturza is an egress encoder that generates a egress code check from an egress header

associated with an egress data block derived from the ingress data block and from the ingress code check); and a multiplexer that generates the outgoing information by combining the egress header with the associated egress data block and the egress code check (Header and Payload Interleaver 98, Inner Encoder 99 and Modulator 101 in Figure 7 of Sturza generate outgoing information by combining the egress header with the associated egress data block and the egress code check).

However Sturza does not explicitly teach the specific use of systematic codes to produce code checks, i.e., parity.

The Examiner asserts that any Reed-Solomon or BCH code has an equivalent systematic Reed-Solomon or BCH code (Note: systematic Reed-Solomon or BCH codes can be derived using Gaussian elimination which preserves all of the properties of the original Reed-Solomon or BCH codes since Gaussian elimination substantially produces an equivalent Reed-Solomon or BCH systematic code). One of ordinary skill in the art at the time the invention was made would have been highly motivated to use a systematic code for two reasons: 1) systematic codes greatly simplify data recovery at the decoder and 2) generally packet protocols for satellite communications have separate areas in a packet for payload and parity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sturza by including use of systematic codes to produce code checks, i.e., parity. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of systematic codes to produce

code checks, i.e., parity would have provided the opportunity to simplify data recovery at the decoder.

35 U.S.C. 103(a) rejection of claim 20.

Sturza teaches modifying the code check generated from data in the ingress data block and the associated ingress header to compensate for non-data bits added to the ingress data block (Interleavers are a means for modifying the code check generated from data in the ingress data block and the associated ingress header to compensate for non-data error bits added to the ingress data block).

35 U.S.C. 103(a) rejection of claim 21.

Modulator 101 in Figure 7 of Sturza is a means for concatenating the egress header with the associated egress data block and the code check generated in step (b) onto a transmission frame.

35 U.S.C. 103(a) rejection of claim 22-27.

Sturza substantially teaches the claimed invention described in claims 15, 20 and 21 (as rejected above).

However Sturza does not explicitly teach the specific use of a specific means for generating a check code.

The Examiner asserts that all of the encoding techniques of the Applicant's claims 22-27 are encompassed by the Sturza patent since the encoding techniques of the

Applicant's claims 22-27 are particular embodiments of the encoding taught in the Sturza patent.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sturza by including use of a specific means for generating a check code. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a specific means for generating a check code would have provided the opportunity to implement a specific embodiment of the encoders taught in the Sturza patent.

35 U.S.C. 103(a) rejection of claim 28.

Decoders 87 and 91 in Figure 6 of Sturza provide steps for comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check (comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check is a standard decoding step for block codes and can be found in any elementary text in error correction coding; the Examiner will provide a reference if the Applicant requests one).

35 U.S.C. 103(a) rejection of claim 29.

Sturza teaches program code that generates an ingress code check from data in an ingress data block and from an ingress header associated with the ingress data block

(Inner Decoder 87 in Figure 6 of Sturza is a step for decoding inner encoded data to produce a outer encoded payload having a Reed-Solomon or BCH code; Note: if the Reed-Solomon or BCH code is systematic the Inner Decoder 87 will produce a outer encoded payload having a Reed-Solomon or BCH check code; Note: col. 10, lines 28-39 in Sturza teach that the design in Sturza can be implemented in software); program code that generates a egress code check from the ingress code check and an egress header associated with an egress data block derived from in the ingress data block (egress Inner Encoder 99 in Figure 7 of Sturza generates an encoded data from the outer encoded payload having a Reed-Solomon or BCH check code generated in step a by the Inner Decoder 87 in Figure 6 and from the egress header from Header Interleaver 96 in Figure 7 associated with an egress data block from Payload Interleaver 97 in Figure 7 derived from the ingress data block received at Payload Deinterleaver 90 in Figure 6; Note: if egress Inner Encoder 99 is systematic then egress Inner Encoder 99 generates a code check); and program code that generates the outgoing information by combining the egress header with the associated egress data block and the egress code check (Modulator 101 in Figure 7 of Sturza combines the egress header with the associated egress data block and code check generated in step b to be modulated onto transmission symbols).

However Sturza does not explicitly teach the specific use of systematic codes to produce code checks, i.e., parity.

The Examiner asserts that any Reed-Solomon or BCH code has an equivalent systematic Reed-Solomon or BCH code (Note: systematic Reed-Solomon or BCH

codes can be derived using Gaussian elimination which preserves all of the properties of the original Reed-Solomon or BCH codes since Gaussian elimination substantially produces an equivalent Reed-Solomon or BCH systematic code). One of ordinary skill in the art at the time the invention was made would have been highly motivated to use a systematic code for two reasons: 1) systematic codes greatly simplify data recovery at the decoder and 2) generally packet protocols for satellite communications have separate areas in a packet for payload and parity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sturza by including use of systematic codes to produce code checks, i.e., parity. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of systematic codes to produce code checks, i.e., parity would have provided the opportunity to simplify data recovery at the decoder.

35 U.S.C. 103(a) rejection of claim 32.

Sturza teaches modifying the code check generated from data in the ingress data block and the associated ingress header to compensate for non-data bits added to the ingress data block (Interleavers are a means for modifying the code check generated from data in the ingress data block and the associated ingress header to compensate for non-data error bits added to the ingress data block).

35 U.S.C. 103(a) rejection of claim 33.

A rotated Reed-Solomon code check is still a code check since a Reed-Solomon code is a cyclic code.

35 U.S.C. 103(a) rejection of claim 34.

Sturza teaches modifying the incoming information to compensate for non-data bits added to the ingress data block (Interleavers are a means for modifying the incoming information to compensate for non-data error bits added to the ingress data block).

35 U.S.C. 103(a) rejection of claim 35.

Modulator 101 in Figure 7 of Sturza is a means for concatenating the egress header with the associated egress data block and the code check generated in step (b) onto a transmission frame.

35 U.S.C. 103(a) rejection of claim 36-41.

Sturza substantially teaches the claimed invention described in claims 29 and 32-35 (as rejected above).

However Sturza does not explicitly teach the specific use of a specific means for generating a check code.

The Examiner asserts that all of the encoding techniques of the Applicant's claims 36-41 are encompassed by the Sturza patent since the encoding techniques of the

Applicant's claims 36-41 are particular embodiments of the encoding taught in the Sturza patent.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sturza by including use of a specific means for generating a check code. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a specific means for generating a check code would have provided the opportunity to implement a specific embodiment of the encoders taught in the Sturza patent.

35 U.S.C. 103(a) rejection of claim 42.

Decoders 87 and 91 in Figure 6 of Sturza provide steps for comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check (comparing the ingress code check to the incoming code check and generating an error when the ingress code check does not equal the incoming code check is a standard decoding step for block codes and can be found in any elementary text in error correction coding; the Examiner will provide a reference if the Applicant requests one).

35 U.S.C. 103(a) rejection of claim 43.

Sturza teaches program code that generates an ingress code check from data in an ingress data block and from an ingress header associated with the ingress data block

(Inner Decoder 87 in Figure 6 of Sturza is a step for decoding inner encoded data to produce a outer encoded payload having a Reed-Solomon or BCH code; Note: if the Reed-Solomon or BCH code is systematic the Inner Decoder 87 will produce a outer encoded payload having a Reed-Solomon or BCH check code; Note: col. 10, lines 28-39 in Sturza teach that the design in Sturza can be implemented in software); program code that generates a egress code check from the ingress code check and an egress header associated with an egress data block derived from in the ingress data block (egress Inner Encoder 99 in Figure 7 of Sturza generates an encoded data from the a outer encoded payload having a Reed-Solomon or BCH check code generated in step a by the Inner Decoder 87 in Figure 6 and from the egress header from Header Interleaver 96 in Figure 7 associated with an egress data block from Payload Interleaver 97 in Figure 7 derived from the ingress data block received at Payload Deinterleaver 90 in Figure 6; Note: if egress Inner Encoder 99 is systematic then egress Inner Encoder 99 generates a code check); and program code that generates the outgoing information by combining the egress header with the associated egress data block and the egress code check (Modulator 101 in Figure 7 of Sturza combines the egress header with the associated egress data block and code check generated in step b to be modulated onto transmission symbols).

However Sturza does not explicitly teach the specific use of systematic codes to produce code checks, i.e., parity.

The Examiner asserts that any Reed-Solomon or BCH code has an equivalent systematic Reed-Solomon or BCH code (Note: systematic Reed-Solomon or BCH

codes can be derived using Gaussian elimination which preserves all of the properties of the original Reed-Solomon or BCH codes since Gaussian elimination substantially produces an equivalent Reed-Solomon or BCH systematic code). One of ordinary skill in the art at the time the invention was made would have been highly motivated to use a systematic code for two reasons 1) systematic codes greatly simplify data recovery at the decoder and 2) generally packet protocols for satellite communications have separate areas in a packet for payload and parity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sturza by including use of systematic codes to produce code checks, i.e., parity. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of systematic codes to produce code checks, i.e., parity would have provided the opportunity to simplify data recovery at the decoder.

Allowable Subject Matter

5. Claims 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The present invention pertains to a method for retaining error-control code protection across block-size discontinuities occurring between incoming information, having incoming data formatted into ingress data blocks and ingress headers, one ingress header associated with each ingress data block and conveying information about the each ingress data block, and outgoing information having the incoming data reformatted into egress data blocks with sizes different from the ingress data blocks and egress headers, one egress header associated with each egress data bock and conveying information about the each egress data block.

Claim 30 recites various features:

"program code that generates an egress code check from the egress header; program code that subtracts a portion of the ingress code check generated from the associated ingress header from the egress code check; and program code that adds the ingress code check to the egress code check".

The Prior Art of record and, in particular Sturza, teach a method for retaining error-control code protection across block-size discontinuities occurring between incoming information, having incoming data formatted into ingress data blocks and ingress headers, one ingress header associated with each ingress data block and conveying information about the each ingress data block, and outgoing information having the incoming data reformatted into egress data blocks with sizes different from the ingress data blocks and egress headers, one egress header associated with each egress data bock and conveying information about the each egress data block, the method comprising: generating a code check from data in an ingress data block and

from an

ingress header associated with the ingress data block (Inner Decoder 87 in Figure 6 of Sturza is a step for decoding inner encoded data to produce a outer encoded payload having a Reed-Solomon or BCH code; Note: if the Reed-Solomon or BCH code is systematic the Inner Decoder 87 will produce a outer encoded payload having a Reed-Solomon or BCH check code); b. generating a code check from the code check generated in step a and an egress header associated with an egress data block derived from in the ingress data block (egress Inner Encoder 99 in Figure 7 of Sturza generates an encoded data from the a outer encoded payload having a Reed-Solomon or BCH check code generated in step a by the Inner Decoder 87 in Figure 6 and from the egress header from Header Interleaver 96 in Figure 7 associated with an egress data block from Payload Interleaver 97 in Figure 7 derived from the ingress data block received at Payload Deinterleaver 90 in Figure 6; Note: if egress Inner Encoder 99 is systematic then egress Inner Encoder 99 generates a code check); and c. generating the outgoing information by combining the egress header with the associated egress data block and code check generated in step b (Modulator 101 in Figure 7 of Sturza combines the egress header with the associated egress data block and code check generated in step b to be modulated onto transmission symbols).

The prior art however are not concerned with and do not teach, suggest, or otherwise render obvious “program code that generates an egress code check from the egress header; program code that subtracts a portion of the ingress code check generated from the associated ingress header from the egress code check; and program code that adds

the ingress code check to the egress code check" as taught by claim 30 and its base and intervening claims. Hence the prior art taken alone or in any combination fail to teach the claimed novel feature in claim 30 in view of its base and intervening claims. Claim 31 depends from claim 30, hence has allowable subject matter for the same reasons.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hinedi; Sami M. et al. (US 6263466 B1) teaches digital satellite data communication systems. Yahagi; Masahiko (US 6442176 B1) teaches a signal transmission method between a mobile terminal and a mobile switching center through a base station in a mobile communication network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066. The examiner can normally be reached on M-F 8-5.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, PhD
Art Unit 2133